

## TWO NEW SPECIES *TRISSOPELOPIA* KIEFFER FROM CHINA, WITH EMENDATION OF THE GENERIC DIAGNOSIS AND A KEY TO THE ADULT MALE *TRISSOPELOPIA* OF THE WORLD (DIPTERA: CHIRONOMIDAE: TANYPODINAE)<sup>1</sup>

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**ABSTRACT:** The genus *Trissopelopia* is recorded for the first time from the Oriental region. *Trissopelopia dimorpha* sp. n. and *T. lanceolata* sp. n. are described from male imagines. A key to adult males of the genus of the world is presented. The generic diagnosis is emended.

**KEYWORDS:** Diptera, Chironomidae, Tanypodinae, *Trissopelopia*, new species, key, China

The Pentaneurini genus *Trissopelopia* was established by Kieffer in 1922. The type species is *T. flavida* Kieffer. The adult males are separated by the following combined characters: scutal tubercle absent; tibial spurs comblike; outer spur of hind leg much smaller than inner spur; tibial comb of leg III absent or indistinct, pulvilli present; tergite IX without a row of setae; palp segment 2 with a distal group of strong dark setae; gonocoxite robust, 2X as long as broad; gonostylus slender, curved, about 2/3 as long as gonocoxite; inferior volsella absent. To date, five species have been recorded in the world: 3 Palearctic (Fittkau 1962, Sasa, Kawai and Ueno 1988, Sasa 1995, 1998), 1 Nearctic (Roback 1971) and 1 Afrotropical (Harrison 1978). According to Wang (2000), only the larva of *T. longimana* (Staeger) has been recorded from North China. In this paper we describe two new species from China and emend the generic diagnosis by Murray and Fittkau (1989).

### METHODS

The morphological nomenclature follows Sæther (1980). Wing length was measured from arculus to wing tip. The material examined was mounted on slides following the procedure outlined by Sæther (1969). Measurements are given as ranges followed by the arithmetic mean, when there are three or more measurements, often followed by the number measured (n) in parentheses. LR represents leg ratio, calculated as the length of tarsus 1 / length of tibia 1. All the types described in this paper are deposited in the Department of Biology, Nankai University, China (BDN).

### SYSTEMATIC REMARKS

Based on the description of the new species from China, the generic diagnosis of *Trissopelopia* given by Murray and Fittkau (1989) should be emended as

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follows: Wing length 2.23-4.00 mm (2.23 mm in *T. dimorpha* sp. n.). Antennal ratio 0.45-2.50 (0.45-0.77 in *T. dimorpha* sp. n.). Tarsomere 1 on fore leg with (*T. lanceolata* sp.n.) or without large sensilla chaetica. The male antenna with 11, 12 (*T. dimorpha* sp.n.) or 14 flagellomeres.

Previously, the genus was known from the Palaearctic, Nearctic, and Afrotropical regions. The new records from China establish its presence in the Oriental region. There are undescribed species in the Neotropical region.

## DESCRIPTION OF TWO NEW SPECIES

### *Trissopelopia dimorpha* sp. n. (Figs. 1-6)

nec *Trissopelopia longimana* (Staeger), Wang 2000: 633.

**Type Data:** Holotype male (BDN No.12555), CHINA: Sichuan Province, Ya'an City, Zhougong River, 18. VI. 1996, light trap, X. Wang. 2 Paratype: 1 male (BDN No.12580), same as holotype; 1 male (BDN No.10200), Henan Province, Luanchuan County, Longyuwan, 10. VII. 1996, 1000m, light trap, J. Li.

**Etymology.** Named for the distinctive antenna of the male.

#### **Male imago** (n=3)

**Dimensions.** Total length 3.10-3.28, 3.15 mm. Wing length 2.23-2.58, 2.45 mm. Total length/wing length 1.20-1.39, 1.29. Wing length/ length of profemur 2.06-2.17, 2.10.

**Coloration.** Head brown. Thorax brown with darker vittae and anterior anepisternum II (Fig. 1); halter yellow. Ground color of abdomen pale yellow, tergites II-VII each with a brown rounded mark in the middle and tergites II-V with additional dark stripe along lateral margins; tergite VIII entirely brown (Fig. 2). Fore legs dark brown, mid and hind legs brown.

**Head.** Antenna (Fig. 3) with 11 or 12 flagellomeres. The setae of the antennal flagellum are reduced in number. Two specimens (no. 12555 and no. 10200) with 11 flagellomeres (Fig. 3a), the 10th flagellomere is longest, the length of flagellomere (10th) / flagellomere (11th) = 0.34-0.74 (53  $\mu$ m / 157  $\mu$ m-113  $\mu$ m / 157  $\mu$ m), AR 0.45-0.46. On the specimen (no.12580) with 12 flagellomeres (Fig. 3b), the 11th flagellomere is longest, the length of flagellomere (11th) / flagellomere (12th) = 2.36 (295  $\mu$ m / 125  $\mu$ m), AR 0.77. Temporal setae 12-15, 13; including 9-10, 10 verticals and 3-5, 4 postorbitals. Clypeus with 21-26, 23 setae. Tentorium 164-175, 168  $\mu$ m long, 49-60, 55  $\mu$ m wide. 3rd palpomere with distal tuft of 9-12, 11 strong setae. Palpomere 1-5 lengths ( $\mu$ m): 62-72, 66; 65-110, 92; 155-180, 170; 215-240, 227; 325-400, 355.

**Wings** (Fig. 4). Wing thickly covered with numerous macrotrichia and without dark marks. VR 0.78-0.80, 0.79. Costal extension 40-50, 43.3 mm long. Brachiolum with 2-3, 2 long setae. Squama with 21-24, 23 setae. Anal lobe evenly rounded.

**Thorax.** Anteprenotal setae 3-4, 3. Dorsocentrals 19-24, 22; acrostichals 16-17, 17; prealars 6-7, 7; Scutellars 6-11, 8. Scutal tubercle absent.

*Legs.* Tibial spurs comblike. Spur on fore tibiae with 3-5, 4 teeth, the main tooth 15-20, 16.7  $\mu\text{m}$  long, equal to the lateral teeth. Middle and hind tibia each with two short and broad terminal spurs. One spur of mid tibia with 6-7, 6 teeth, the main tooth 33-37, 35  $\mu\text{m}$  long, slightly longer than the lateral teeth; the other spur with 8-9, 8 teeth, the main tooth 23-30, 25.3  $\mu\text{m}$  long, equal to the lateral teeth. Spur on posterior tibia with 4-6, 5 teeth, the main tooth 20-25, 23  $\mu\text{m}$  long and slightly longer than the lateral teeth, the other spur s with 7-8, 8 teeth, the main tooth 18-28, 22  $\mu\text{m}$  long equal to the lateral teeth (Fig. 5). Tibial comb indistinct on hind leg. Claw slender, distally pointed and weakly curved Pulvilli present. Length ( $\mu\text{m}$ ) and proportions of legs (fore tarsi of specimen No. 10200 were lost) as in Table 1.

Table 1. Range of lengths ( $\mu\text{m}$ ) and proportions of legs of *T. dimorpha* sp. n. Because we got the same measurements, LR in p1 and p3 of *T. dimorpha* sp. n have no variation.

	fe	ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>	ta <sub>4</sub>	ta <sub>5</sub>	LR
P <sub>1</sub>	1025-1250 1167	1500-1875 1708	1250-1325	750-82	525-550	340-360	120-130	0.71
P <sub>2</sub>	1100-1325 1242	1450-1625 1558	950-1100 1050	375-475 433	250-350 308	175-225 208	100-125 117	0.66-0.69 .068
P <sub>3</sub>	1000-1200 1125	1650-1875 1750	1175-1325 1242	525-775 692	425-525 492	275-350 310	100-140 125	0.71

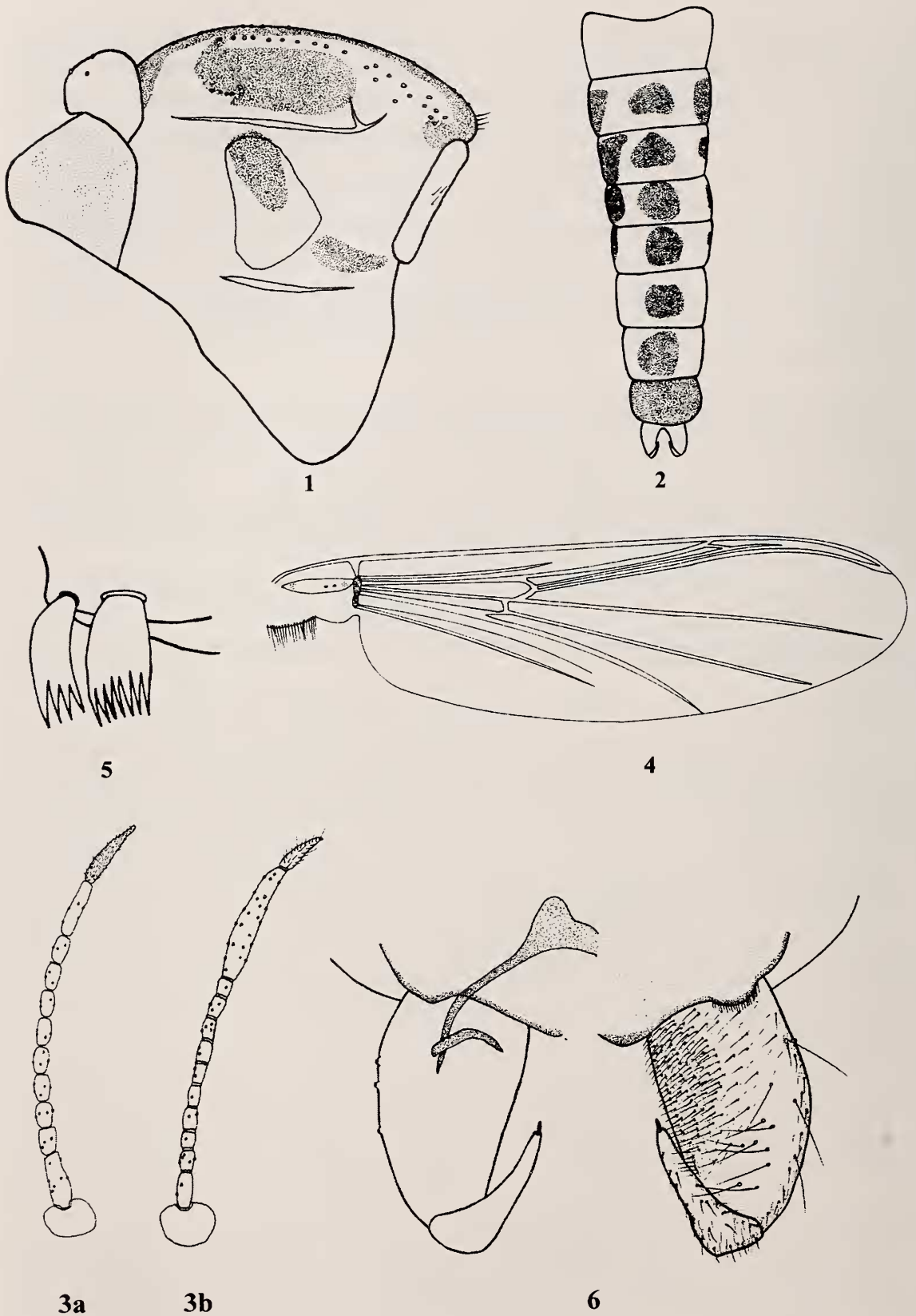
*Hypopygium* (Fig. 6). Tergite IX without a row of setae. Anal point broad and blunt. Phallapodeme 55-72, 65 mm long. Anterior of sternapodeme pointed, 8-10, 9  $\mu\text{m}$  in width. Gonocoxite 145-190, 168  $\mu\text{m}$  long. Length of gonocoxite/width of gonocoxite=1.7-1.9, 1.8. Gonostylus 95-100, 97 mm long, simple and slightly curved, basal portion 35-45, 41  $\mu\text{m}$  wide. Without inferior volsella.

*Distribution:* The species has been found in both Oriental (southern Sichuan Province) and Palaearctic China (northern Henan Province). The specimen were collected by light trap from the side of Zhougong River, a mesotrophic running river in Sichuan Province and the side of a small brook in a subtropical mountain area in Henan Province.

**Remarks:** According to Wang (2000), one male was found in Henan Province and treated as *T. longimana* (Staeger). When reexamining the specimen, the authors found it was incorrectly identified. Together with specimens from Sichuan Province we determined them to be a species new to science. The new species differs from all known species of *Trissopelopia* by the characteristic color pattern on the male abdomen (Fig. 2) and femalelike antenna with 11 or 12 flagellomeres, the setae of the antennal flagellum are reduced in number, and low antennal ratio. Although there is variation in the number and shape of flagellomeres, most of the other characters are identical. Therefore, we treat this as individual variation within the species.

Females, pupa, and larva unknown.





Figs. 1-6. *Trissopelopia dimorpha* sp.n. male imago. 1. Thorax. 2. Abdomen. 3a Antenna. (BDN No.12555). 3b Antenna (BDN No.12580). 4. Wing. 5. Tibial spur on hind leg. 6. Hypopygium.

*Trissopelopia lanceolata* sp. n. (Figs. 7-14)

**Type Data:** Holotype male (BDN No. 09240), CHINA: Shannxi Province, Ningshan County, Huoditang, 14. VIII. 1994, sweep net, B. Ji. Paratype: 1 male (BDN No. 12571), Sichuan Province, Ya'an City, Zhougong River, 18. VI. 1996, light trap, X. Wang.

**Etymology:** Named for the lanceolate sensilla chaetica on the fore legs, which is unique to the genus.

**Male imago (n=2)**

**Dimensions.** Total length 4.15-4.35 mm. Wing length 2.70-2.73 mm. Total length/wing length 1.54-1.60. Wing length/ length of profemur 2.14-2.20.

**Coloration:** Head brown. Thorax (Fig. 7) brown with pale vittae and postnotum; anterior anepisternum II and preepisternum with dark marks; halter yellow. Abdomen tergite I pale yellow; tergite II-V pale yellow with broad brown basal bands; tergite VI-VIII largely brown (Fig. 8); hypopygium yellowish. Fore legs dark brown, mid and hind legs brown.

**Head.** Antenna (Fig. 9) with 14 flagellomeres, flagellomere 13 much longer than flagellomere 14, flagellomere (13th)/flagellomere (14th)=3.25-3.30 (780  $\mu$ m /240  $\mu$ m -760  $\mu$ m /230  $\mu$ m ), terminal flagellomere with numerous sensory setae on distal half. AR 1.94-2.06. Temporal setae 14-15; including 10 verticals and 5 postorbitals. Clypeus with 22-24 setae. Tentorium 200-212  $\mu$ m long, 78-85  $\mu$ m wide. 3rd palpomere with distal tuft of 9-12 strong setae. Palpomere 1-5 lengths (mm):55-70; 105-120; 155-190; 215-255; 350-390.

**Wings** (Fig. 10). Membrane with numerous macrotrichia in all cells and without pigment marks. VR 0.79-0.87. Costal extension 40 mm long. Brachiolum with 2 long setae. Squama with 28-31 setae. Anal lobe slightly protruding.

**Thorax** Anteprepronotum with 3-5 setae. Dorsocentrals 18-20; acrostichals 19-20; prealars 6-7; Scutellum with 8-11 setae. Scutal tubercle absent

Table 2. Lengths ( $\mu$ m) and proportions of legs of *T. lanceolata* sp. n.

	fe	ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>	ta <sub>4</sub>	ta <sub>5</sub>	LR
P <sub>1</sub>	1225-1275	1900-1975	1150-115	725-75	550-57	400-42	125-12	0.58-0.61
			0	0	5	5	5	
P <sub>2</sub>	1350-1375	1725-1800	1175-120	375-40	325-32	225-22	110-10	0.67-0.68
			0,	0	5	5	0	
P <sub>3</sub>	1250-1300	1925-2225	1425-150	775-85	525-55	325-35	125-12	0.67-0.74
			0	0	0	0	5	

**Legs.** Tibial spurs comblike. Spur on fore tibia with 4-5 teeth, the main tooth 15-20  $\mu$ m long, equal to the lateral teeth. Middle and hind tibia each with two short and broad terminal spurs. One spur on mid with 5-10 teeth, the main tooth

43-45  $\mu\text{m}$  long and slightly longer than the lateral teeth; the other spur with 10 teeth, the main tooth 20-23  $\mu\text{m}$  long, equal to the lateral teeth. Spur on posterior tibia with 5-6 teeth, the main tooth 23-30  $\mu\text{m}$  long and slightly longer than the lateral teeth, the other spur with 7 teeth, the main tooth 20  $\mu\text{m}$  long, equal to the lateral teeth (Fig. 11). Tarsomere I of front legs with six large lanceolate sensilla chaetica (Figs. 12-13). Tibial comb indistinct on hind leg. Claws are pointed apically and weakly curved. Pulvilli present. Lengths ( $\mu\text{m}$ ) and proportions of legs as in Table 2.

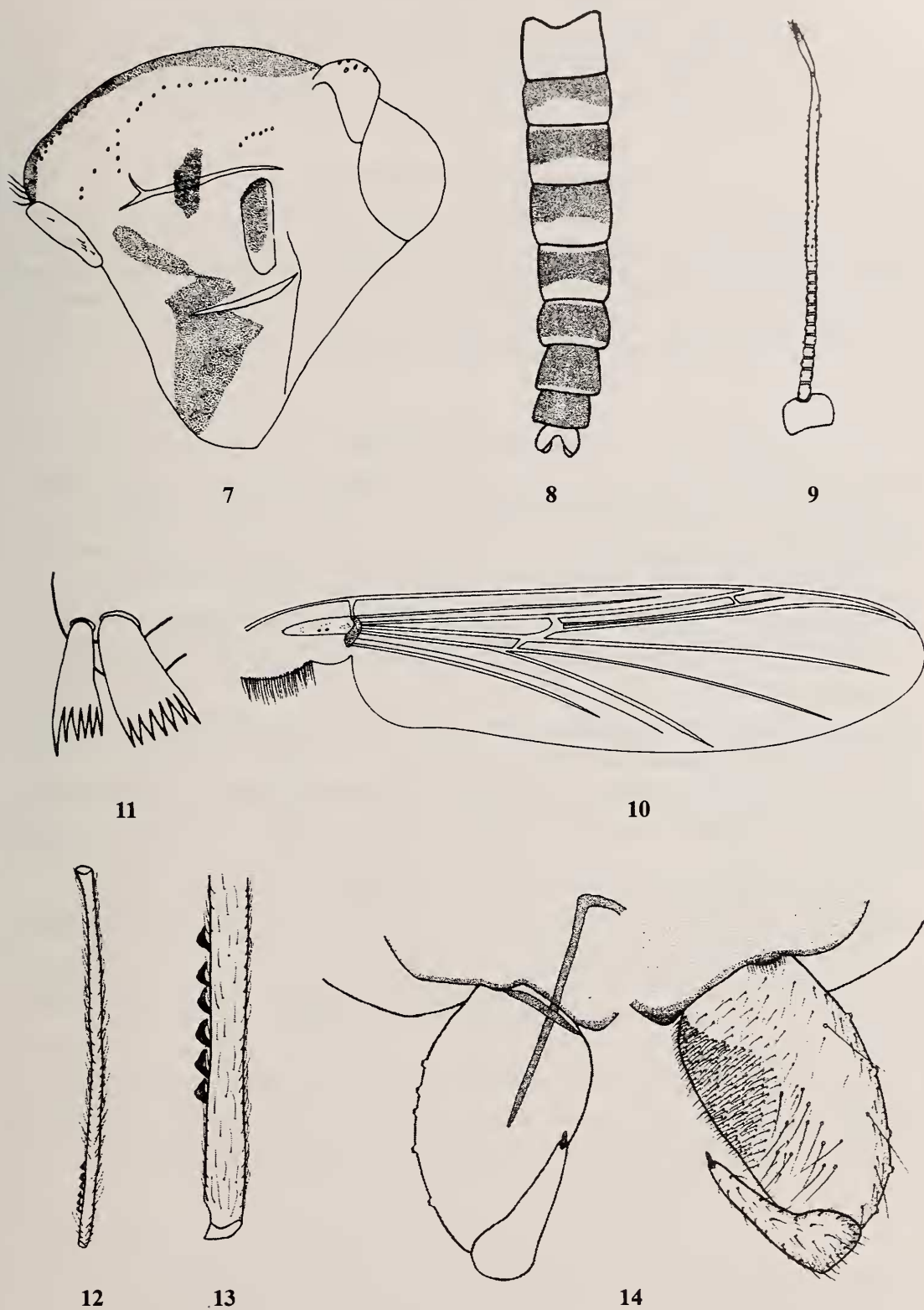
*Hypopygium* (Fig. 14). Tergite IX without a row of setae. Anal point blunt and short. Phallapodeme 60-63  $\mu\text{m}$  long. Anterior of sternapodeme pointed, 8  $\mu\text{m}$  in width. Gonocoxite 175-180  $\mu\text{m}$  long; length of gonocoxite/width of gonocoxite = 1.71-1.75; with strongly setose basomedial area; without inferior volsella. Gonostylus 110-115  $\mu\text{m}$  long, simple and slightly curved, basal portion 45  $\mu\text{m}$  wide.

*Distribution*: The specimen were collected from a subtropical mountain area by sweeping net in Shannxi Province and at riverside by light trap in Sichuan Province.

**Remarks**: The present new species resembles *T. oyabetrispinosa* Sasa, Kawai and Ueno (1988) from Japan and *T. longimana* (Stager) from the Palaearctic as figured by Sasa (1990:165) in abdomen coloration, but can be separated from them and other members in the genus by having 6 large lanceolate sensilla chaetica on tarsomere I of the fore legs.

### KEY TO ADULT MALES OF THE GENUS *TRISSOPELOPIA* OF THE WORLD

1. Tarsomere I of fore legs with six large lanceolate sensilla chaetica; Oriental (China) ..... *T. lanceolata* sp. n.  
Tarsomere I of fore legs without sensilla chaetica ..... 2
2. Antenna with 11 or 12 flagellomeres,  $AR < 1.0$ ; Palaearctic and Oriental (China) ..... *T. dimorpha* sp. n.  
Antenna with 14 flagellomeres,  $AR > 1.5$  ..... 3
3. Hind tibia comb with three comb setae; Japan ..... *T. oyabetrispinosa* Sasa  
Hind tibia without comb setae ..... 4
4. Middle  $Ta_2 < Ta_3$ ,  $LR_1 < LR_2 = LR_3$  (from Roback 1971); Nearctic .....  
..... *T. ogemawi* Roback  
Middle  $Ta_2 > Ta_3$ ,  $LR_1 = LR_2 < LR_3$  (from Roback 1971) ..... 5
5. Abdomen with TII-VIII and hypopygium mostly dark.  $LR_{II} 0.56$ ; smallest spur on Ti III with 7 lateral teeth (from Harrison 1978); Afrotropical .....  
..... *T. montivaga* Harrison  
Abdominal TII-VI/VII with anterior transverse dark bands; hypopygium pale;  $LR_{II} 0.62-0.64$ ; smallest spur on Ti III with 4 lateral teeth; Palearctic ..... 6



Figs 7-14 *Trissopelopia lanceolata* sp.n. male imago: 7. Thorax. 8. Abdomen. 9. Antenna. 10. Wing. 11. Tibial spur on hind leg. 12. Tarsomere I of fore legs. 13. Lanceolate sensilla chaetica. 14. Hypopygium.



6. Wing length 3.6-4.0 mm; deep reddish-brown species (from Fittkau 1962)...  
 .....*T. longimana* (Staeger)  
 Wing length 3.0-3.4 mm; generally pale yellowish species (from Fittkau  
 1962) .....*T. flavida* Kieffer

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